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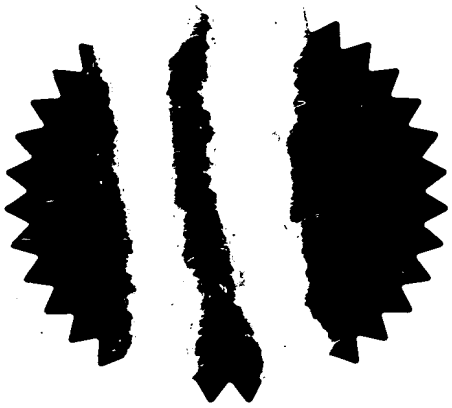

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Dated 13 August 2003

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065EP02 E746294-1 D00107
P01/7700 0.00-0220704.1

# Request for ~~grant of a patent~~

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Cardiff Road
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1. Your reference — TC-MP100046-GB

2. Patent application number
*(The Patent Office will fill in this part)* — 06 SEP 2002 — 0220704.1

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

Aspect Management Limited
Wrenbury Hall
Wrenbury
Nantwich
Cheshire
CW5 8EJ

Patents ADP number *(if you know it)* — 8428724001

If the applicant is a corporate body, give the country/state of its incorporation — GB

4. Title of the invention

FRAMEWORK CONNECTORS

5. Name of your agent *(if you have one)*

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

Lloyd Wise, McNeight & Lawrence
Regent House
Heaton Lane
Stockport
Cheshire
SK4 1BS

Patents ADP number *(if you know it)* — ~~0001115001~~ — 8458275001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

| Country | Priority application number *(if you know it)* | Date of filing *(day / month / year)* |
|---|---|---|
| | | |

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

| Number of earlier application | Date of filing *(day / month / year)* |
|---|---|
| | |

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*

*a) any applicant named in part 3 is not an inventor, or*
*b) there is an inventor who is not named as an applicant, or*
*c) any named applicant is a corporate body.*
*See note (d))*

Yes

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| | |
|---|---|
| Continuation sheets of this form | |
| Description | 7 |
| Claim(s) | 3 |
| Abstract | 1 |
| Drawing(s) | 3 +3 |

10. If you are also filing any of the following, state how many against each item.

| | |
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| Priority documents | |
| Translations of priority documents | |
| Statement of inventorship and right to grant of a patent *(Patents Form 7/77)* | |
| Request for preliminary examination and search *(Patents Form 9/77)* | |
| Request for substantive examination *(Patents Form 10/77)* | |
| Any other documents *(please specify)* | |

11. I/We request the grant of a patent on the basis of this application.

Signature: Lloyd, Wise McNaughy & Lawrence  Date: 5 September 2002

12. Name and daytime telephone number of person to contact in the United Kingdom: A R Collingwood
0161 480 6394

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# FRAMEWORK CONNECTORS

This invention relates to the construction of conservatories of the type in which glazed window frames are provided between an eaves beam and a cill, the eaves beam and the cill being in the form of extruded profiles, e.g. of a metal such as aluminium or aluminium alloy or of a plastics material.

One of the problems associated with the fabrication of such conservatories lies in the cutting of the extruded profiles to form corner joints. This is generally done by mitring of adjacent sections of the extruded profile. To ensure accuracy, the cutting is often done off-site (e.g at factory premises) and the previously mitred profiles are then transported to the erection site. Another problem is the variation in the angles that may be required between adjacent eaves beam sections and/or cill sections.

The present invention seeks to provide a conservatory design which eliminates the need for the production of mitred joints between sections of the eaves beam profiles and also affords significant flexibility in terms of the angles at which adjacent eaves beam sections may be interconnected .

According to the present invention there is provided a conservatory framework comprising an eaves structure from which the roof is supported, at least one corner and/or in-line joint in the eaves structure being formed by a two part connector which interconnects adjacent sections of the eaves structure, the two parts being angularly adjustable relative to one another about an axis which is substantially perpendicular to the longitudinal axis or axes of the sections.

In this way, the need to mitre the profiled sections is eliminated. Instead, each profiled section may be cut substantially at right angles relative to the length of the section and the connector parts may be adjusted to accommodate the angle at which the profile sections are to be interconnected.

The framework structure typically includes a cill for mounting one or more window frames located below the eaves structure.

Each connector part may be arranged to interfit with each profiled section in such a way that the two components (connector part and section) are telescopically interconnected, e.g. so that one component inserts into the other.

The connector parts may all be of substantially the same shape and configuration.

Each connector part may be provided with at least one lug arranged to be located in superimposed relation with a lug or lugs of the second connector.

The lug(s) associated with each connector part may be offset in such a way that two substantially identical connector parts can be linked with one part in inverted relation with the other so that the main bodies of the two parts can be in alignment while the lugs are in superimposed relation.

One feature of the invention resides in the use of the connectors to locate load-transmitting members which serve to transmit the weight of the roof in such a way that that the window frames in use are largely relieved from carrying the weight of the roof.

Another feature of the invention resides in the use of the eaves beam connectors to mount the glazing bars of the roof, e.g. for tilting adjustment according to the desired pitch of the roof.

These and other features and aspects of the present invention will become further apparent from the following description of embodiments thereof and the appended claims.

The invention will now be described by way of example only with reference to the accompanying drawings, in which:

Figure 1 is a diagrammatic line drawing showing part of a conservatory from a side elevation;

Figure 2 is a corresponding plan view of the conservatory;

Figure 3 is a side view of an assembly with the connectors shown separated;

Figure 4 is a plan view of the assembly showing the connectors separated;

Figure 5 is a side view showing the connectors assembled together with a glazing bar mount;

Figure 6 is a plan view showing one corner of a conservatory roof employing the connectors of Figures 3 to 5;

Figure 7 is a side view showing the connector assembly and glazing bar mount in a glazing bar.

Referring firstly to Figures 1 and 2, a conservatory in accordance with the invention typically comprises a load-bearing wall 100 carrying a cill 102 above which a roof structure 104 is supported with glazed window frames (not shown) located between the cill 102 and an eaves beam 106 (also commonly referred to as the ring beam) of the roof structure. The roof structure comprises a ridge 108 and glazing bars 110 extending between the ridge 108 and sections of the eaves beam which extend around the sides of the conservatory. The glazing bars 110 serve to support roofing panels, e.g. of glass. polycarbonate or polyvinylchloride, extending from the ridge 108 and overhanging the eaves beam sections 106. The eaves beam 106 and the cill 102 each comprise extruded profiles of for example aluminium or an aluminium alloy.

In the embodiment illustrated in Figures 1 and 2, the eaves beam and the cill are each made up of a number of sections cut from the respective extruded profiles and joints between adjacent sections are shown at locations E1, E2 and C1, C2, E1 and C1 being corner joints and E2 and C2 being intermediate joints between in-line sections of the extruded profiles. Typically, in a 3 segment-fronted conservatory design as shown in Figures 1 and 2, the internal angles at joints E1 and C1 will be about 135°. Where the design is a 5 segment-fronted conservatory, the internal angles at joints E1, C1 will be about or 150°. In a design such as that shown in Figure 3, the eaves beam and cill joints may be of the in-line type corresponding to E2, C2 and the corner joints may be right angled.

Currently the practice is to produce the joints by mitring the adjacent sections of the extruded profiles forming the eaves beam and the cill, which is time consuming and requires a significant degree of accuracy in cutting if well-fitting joints are to be achieved. For this reason, the sections of the extruded profiles are usually cut to size and mitred off-site and then delivered to the construction site. Also, in current designs, the weight of the

roof structure is largely transmitted from the eaves beam to the cill and hence to the load-bearing wall 100 through the glazed window frames which are often fabricated from extruded PVC profiles. A feature of the present invention allows for elimination of mitring of the adjacent sections of the extruded profiles by employing separate connectors which provide the corner joints or in-line joints of the eaves beam and "squaring off" the ends of the extruded profiles by cutting them substantially at right angles to the length of the profile. Another feature of the present invention allows significant latitude in the angles at the joints between the eaves beam sections.

The connectors between adjacent sections of the eaves beam may be designed for the purpose of controlling the load-bearing characteristics of the conservatory framework and, in particular, to ensure that the window frames are largely relieved of load-bearing duties so far as the weight of the roof structure is concerned. In particular, the connectors may be designed to co-operate with vertical load-transmitting members 164 which transmit the weight of the roof structure to the load-bearing wall 100 thereby substantially by-passing the window frames. These load-transmitting members 164 are primarily located at the corners of the conservatory framework but, particularly where the framework involves relatively long spans of the eaves beam with the attendant possibility of "sagging", they may also be located intermediate the corners by inclusion of the in-line connectors pairs in the eaves beam structure. In a modification, the load-transmitting members 164 may be arranged to transfer the weight of the roof directly to ground level rather than to the wall 100.

One example of a corner connector assembly for the joints E1 in the eaves beam structure is shown in Figures 3 to 7 and will be seen to comprise a pair of connectors 118 each comprising a main body 120 which is intended to fit in telescopic fashion with an eaves beam profile having a squared off end. For instance, the body 120 may be designed to be fit inside the eaves beam profile and it may be located by a shoulder or

shoulders on the body which abut against the squared off end of the eaves beam section. Such an arrangement will be apparent in Figure 6 where the part of the body 120 of each connector is received in the squared off eaves beam section 106 and part projects externally, there being a shoulder 121 abutting against the squared off end of the eaves beam section. Each connector 118 is provided with a number of lugs 122 which project from the body 120 and have aligned apertures 124. The connectors 118 may be manufactured as single piece mouldings of a plastics material having suitable properties in terms of for example ruggedness and strength for the intended application.

The lugs 122 are arranged in offset relation relative to the opposite faces 126, 128 of the body 120 so that the lugs 122 on one can be meshed or interdigitated with those on the other connector when the two connectors are brought together with one in inverted relation relative to the other as shown in Figure 5. When so meshed, the lugs 122 can be arranged so that their apertures 124 are all aligned to receive a rod 130 (see Figure 5) forming part of a device 132 which serves to mount glazing bars and/or to transmit load to the load-transmitting members 164 (see Figure 1). When the connectors 118 are coupled together in this manner, it will been seen that they can be adjusted angularly relative to each other, for example to secure a joint angle of 135° or 150° or any other angle that may be required. Also, it will be appreciated that the connectors 118 may be used to interconnect in-line sections of the eaves beam (i.e. an angle of 180°).

The device 132 includes one half of a male-female coupling for connecting the lower end of a glazing bar 110 to the eaves beam. In the illustrated embodiment, the device 132 is provided with the female part of the coupling and is in the form of a channel 134 which can be oriented, e.g. by rotation of the rod 130, so that it is substantially perpendicular to the bisector 136 of the angle included between the connectors 118 (see Figure 6). The channel 134 acts as a socket receiving a male part 138 associated with the glazing bar 110 so that the pitch of the glazing bar can be varied according to requirements

by the tilting allowed by the male-female coupling between channel 134 and male part or spigot 138. The male part associated with the glazing bar may for instance form part of a tilting shoe device of the form disclosed in our prior UK Patent Application No. 0119048.7, the entire disclosure of which is incorporated herein by this reference, the tilting shoe device being fitted in telescopic relation with the lower end of the glazing bar 106.

The device 132 may also serve to transmit load to a load-transmitting member 164 which in turn may transmit the load exerted by the roof to the cill of the structure. The lower end of the rod 130 is arranged to be engaged with the upper end of the member 164 in order that load can be transmitted from the roof to the member 164. In Figure 3, the connection is effected through a plate 140 which seats on and may be secured, e.g. by welding, to the upper end of the member 164, the plate 140 having a threaded connection with the lower end of the rod 130. The threaded connection may take the form of a threaded section 150 on the lower end of the rod 130 which engages in a nut 142 secured, e.g. by welding, to the underside of the plate 140. Although, in Figure 5, a gap is present between the underside of the connectors 118 and the plate 140, in practice the connectors may seat on the plate 140.

Although in the illustrated embodiment, the device for coupling the glazing bar to the connectors allows the bar to be tiltably adjusted, we do not exclude the possibility that it may be such that the bar is mounted at a fixed angle of tilt.

Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance, it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features disclosed herein and/or shown in the drawings whether or not particular emphasis has been placed on such feature or features.

## CLAIMS

1. A conservatory framework comprising an eaves structure from which the roof is supported, at least one corner and/or in-line joint in the eaves structure being formed by a two part connector which interconnects adjacent sections of the eaves structure, the two parts being angularly adjustable relative to one another about an axis which is substantially perpendicular to the longitudinal axis or axes of the sections.

2. A framework as claimed in Claim 1 including a cill for mounting one or more window frames located below the eaves structure.

3. A framework as claimed in Claim 1 or 2 in which each connector part is may arranged to interfit with each profiled section in such a way that the two components (connector part and section) are telescopically interconnected.

4. A framework as claimed in any one of the preceding claims in which the connector parts are all be of substantially the same shape and configuration.

5. A framework as claimed in any one of the preceding claims in which each connector part is provided with at least one projection arranged to be located in superimposed relation with a projection or projections of a like connector.

6. A framework as claimed in Claim 5 in which each connector part has at least two lugs and the connector parts are arranged with their projections in interdigitated relation.

7. A framework as claimed in Claim 5 or 6 in which the lugs are apertured so that the connector parts can be coupled together by a pin or rod passing through aligned apertures in the lugs of adjacent connector parts.

8. A framework as claimed in Claim 5, 6 or 7 in which the projection(s) associated with each connector part are offset in such a way that two substantially identical connector parts can be linked with one part in inverted relation with the other so that the main bodies of the two parts can be in alignment while the lugs are in superimposed relation.

9. A framework as claimed in any one of the preceding claims in which the connector parts locate a load-transmitting member.

10. A framework as claimed in Claim 9 in which the connector parts locate a male or female component of a coupling for tiltably connecting a glazing bar to the eaves structure.

11. A framework as claimed in Claim 9 or 10 when dependent on any one of Claims 5 to 8 in which the load-transmitting member and/or the male or female coupling component is located by said projections.

12. A framework as claimed in Claim 10 or 11 in which said component is in the form of a channel for tiltably receiving a male part associated with a glazing bar.

13. A connector assembly comprising first and second connector parts for telescopic connection with eaves beam sections of a roof, the connectors parts having interdigitating projections with aligned apertures receiving a pin or rod about which the connectors can be angularly adjusted, the arrangement being such that two substantially

identical connector parts can be linked with one part in inverted relation with the other so that the main bodies of the two parts are in alignment while the projections are in interdigitated relation.

14. A connector assembly as claimed in Claim 13 in which the pin or rod is provided at its upper end with one component of a male-female coupling.

15. A connector assembly as claimed in Claim 13 or 14 in which the lower half of the pin or rod is provided with means for transmitting load.

16. A framework substantially as hereinbefore described with reference to, and as shown in, the accompanying drawings.

17. A connector assembly substantially as hereinbefore described with reference to, and as shown in, the accompanying drawings.

**ABSTRACT**

**FRAMEWORK CONNECTORS**

A conservatory framework comprises an eaves structure from which the roof is supported, at least one corner and/or in-line joint in the eaves structure comprising two connector parts which are angularly adjustable relative to one another.

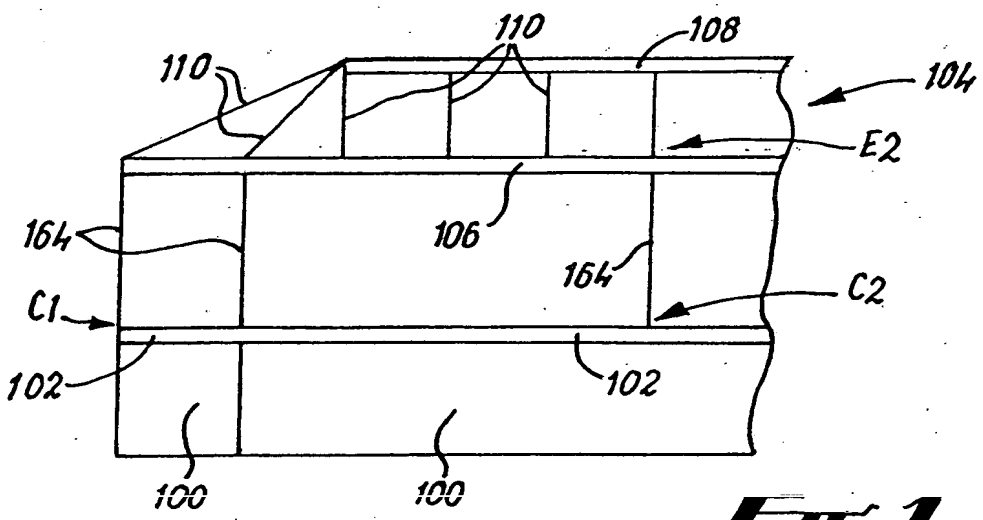
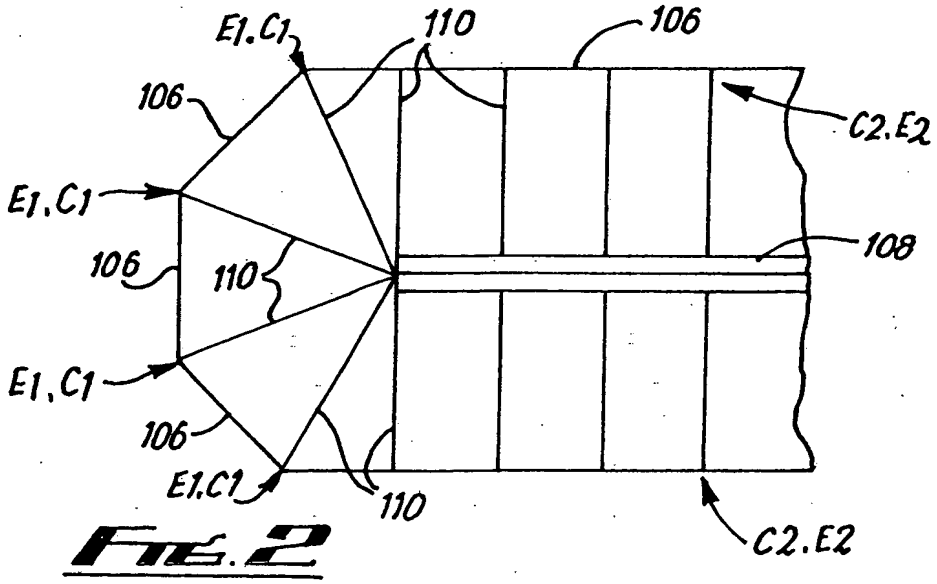

110
108
110
104
E2
106
164
164
C1
C2
102
102
100
100

FIG. 1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110
106
106
C2.E2
E1.C1
108
106
110
E1.C1
106
E1.C1
110
C2.E2

FIG. 2

Fig 6

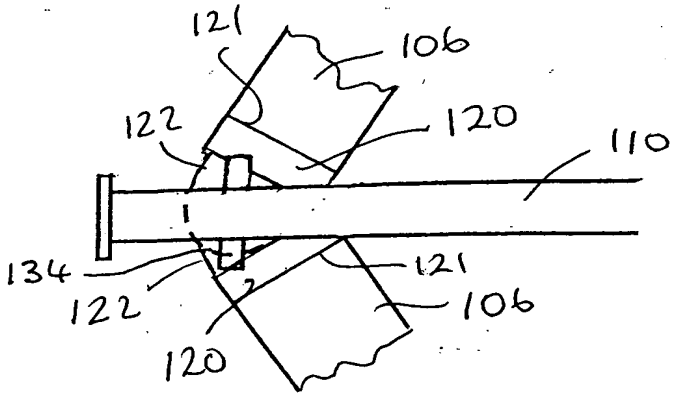
121
106
122
120
110
134
122
121
106
120

Fig 7

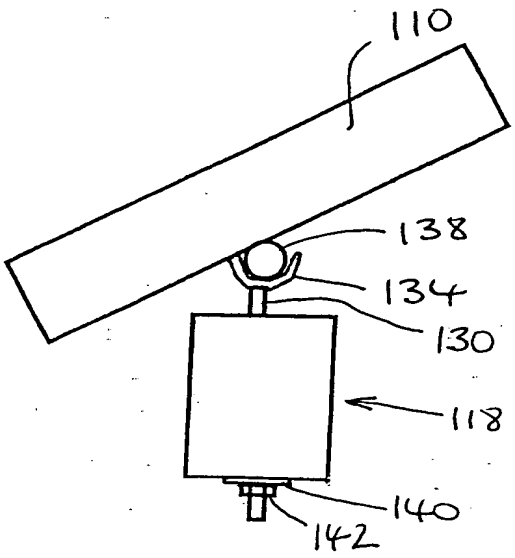
110
138
134
130
118
140
142

Fig 3

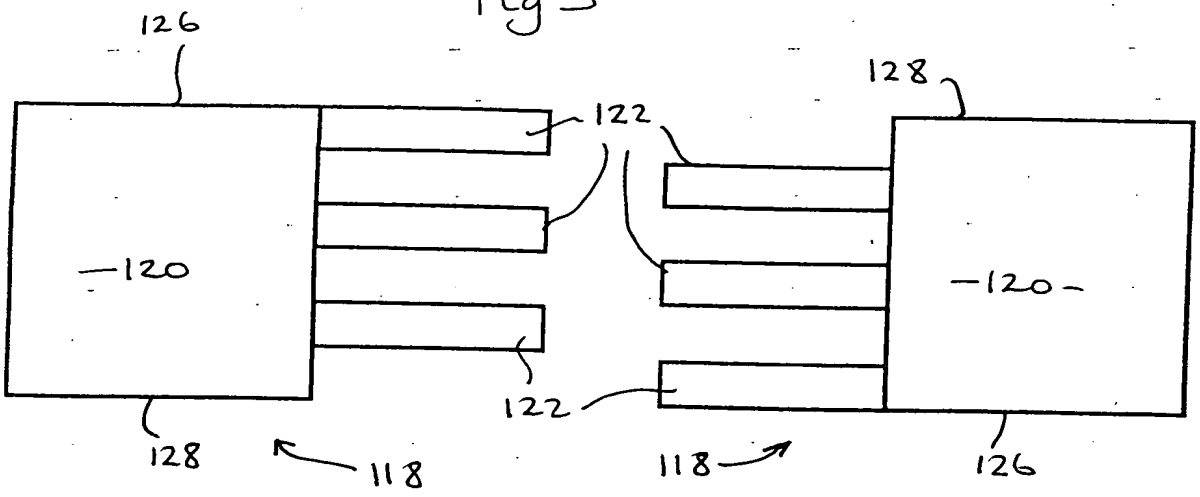


Fig 4

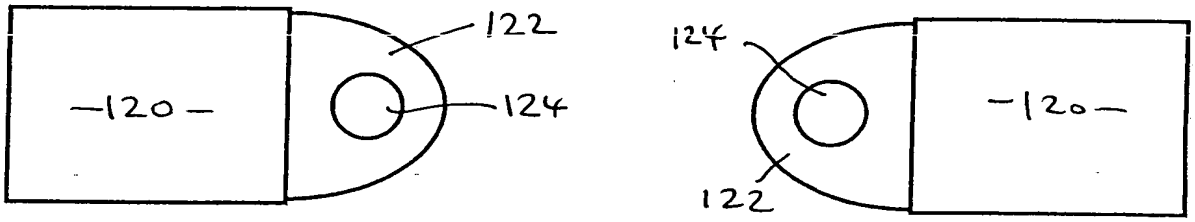


Fig 5